

Environmental Management at The Australian National University



2016 Annual Report



Australian
National
University

ANU
green

The background of the slide features a photograph of a multi-story brick building with several windows. Large, leafy trees are in the foreground and midground, partially obscuring the building. The sky is bright and overcast. The overall scene is a typical university campus setting.

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A Message from the Sustainability and Heritage Office

The Australian National University strives to be an international leader in campus sustainability and heritage management and is committed to continual improvements for the environment. ANU achieved a number of positive sustainability and heritage outcomes in 2016. Reductions were seen in waste production, fleet carbon emissions and energy use per person. These are great sustainability achievements considering the increase in Gross Floor Area at the Acton campus, as well as providing accommodation to almost 5000 students who are characteristically high users of energy and high producers of waste. ANU Heritage had positive impacts in engaging the campus, leading over 20 tours and talks on both the Acton and Mt Stromlo campus. The Heritage team also made significant progress on the identification and assessment of collections at ANU and the contribution to major capital and minor works projects to ensure conservation of heritage values.

Staff and students are often attracted to the Acton Campus at ANU due to the unique grounds it's situated on with over 10,000 trees, over 140 species of animals, and the critically endangered Old Canberra House Grassy Woodlands. Continuing to engage with staff, students and the wider ANU community will help us to continue to achieve our Environmental Management Plan targets and continue to protect our natural environment.

I look forward to working with the Sustainability and Heritage Office and the broader ANU community to further improve the environmental status of ANU in 2017.

John Sullivan
Sustainability Manager
The Australian National University



SNAPSHOT 2016

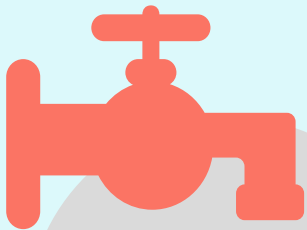


3% ↓

DECLINE IN ENERGY USE PER PERSON
since 2014

64%

OF GREEN
COMMUTERS
TRAVELLING
TO CAMPUS

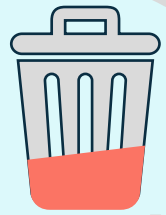


12%

decrease in total water
consumption per person
since 2014

2

heritage grants
awarded to
support ongoing
conservation and
outreach activities



28%

cut in waste per person
since 2014



14%

reduction in
fleet carbon
emissions
since 2014

27%
reduction
in residual
environmental
risk

since 1998



37%

increase
in

GFA

since 2008



49%

RECYCLE RATE

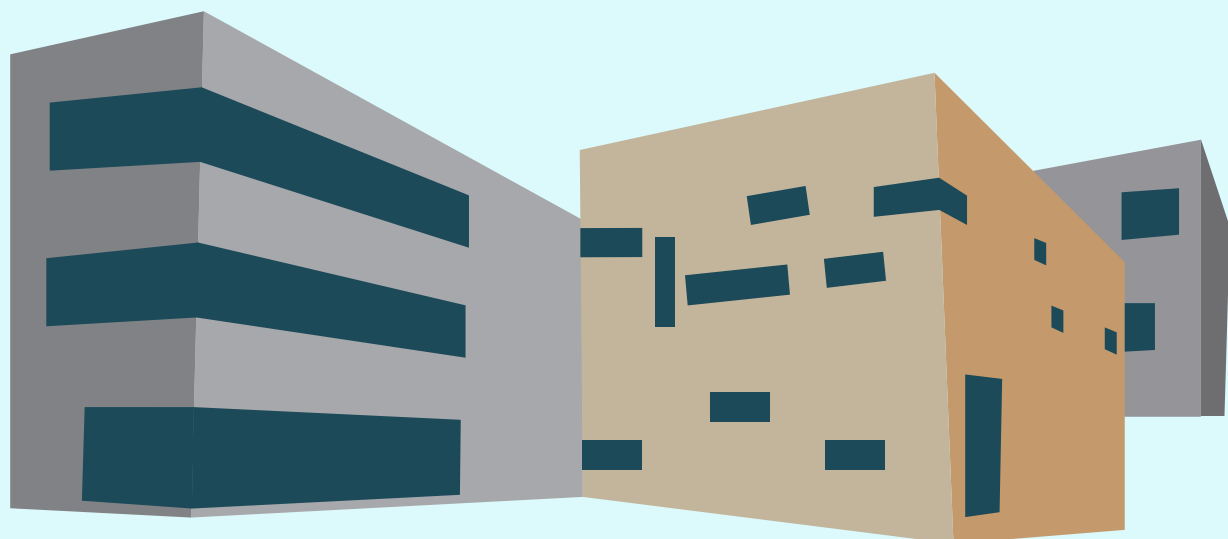
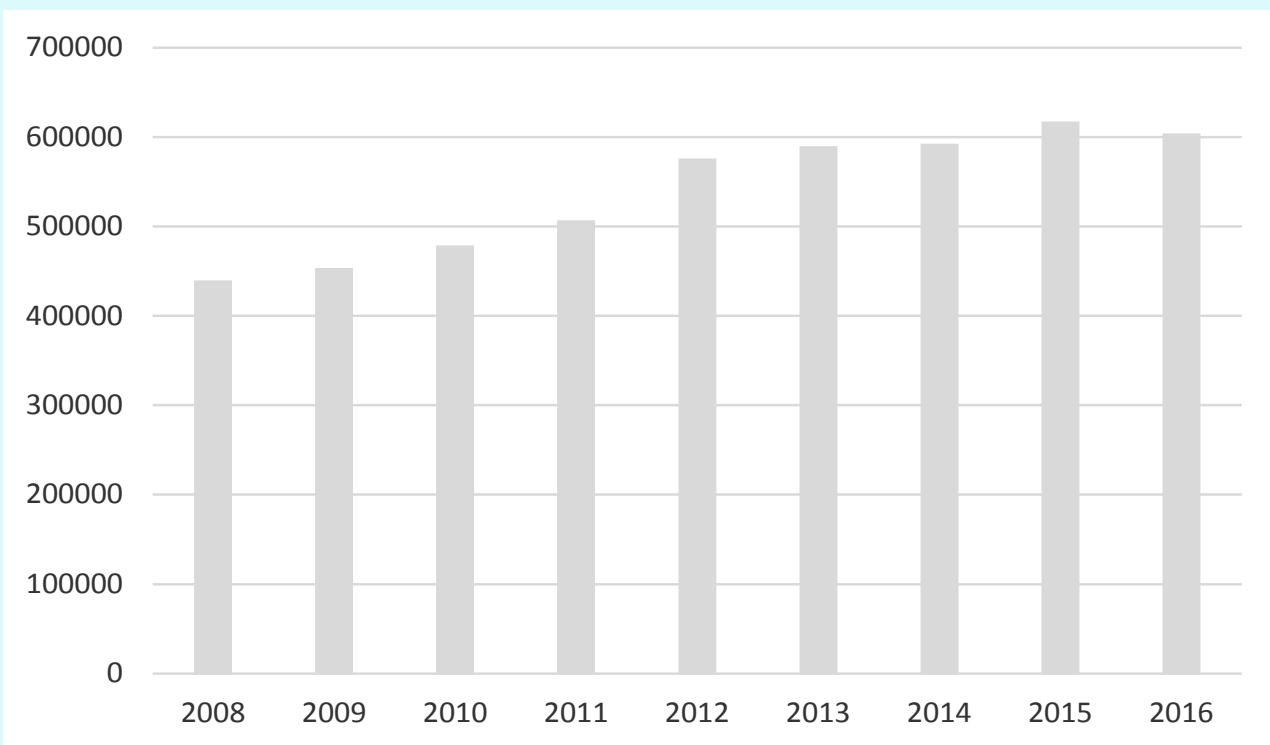
ENVIRONMENTAL MANAGEMENT AT THE ANU

ANU aims to provide a research and study environment that meets the world's best sustainability practice. Eighteen years ago ANU created its first Environment Management Plan (EMP), a comprehensive program for improving campus sustainability. ANU is now working from its fourth Environmental Management Plan.

In 2016, ANU achieved some significant results towards improving campus sustainability. These results can be seen in all aspects of environmental management from fleet carbon emissions to water use per person. Improving campus sustainability has been a challenge due to the 37% increase in Gross Floor Area (GFA) from 2008 to 2016. As can be seen in the graph below, there was a slight decrease in GFA in 2016 due to demolition of old buildings to make way for new buildings. It is expected that the GFA will continue to increase from 2017 onwards.

The following pages outline each aspect of the University's Environmental Management Plan in greater detail. All reductions are calculated from a 2014 baseline.

Gross Floor Area (m²)

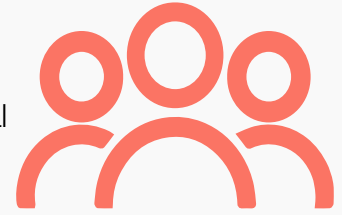


CULTURE

“Embed sustainability thinking and behaviour into the culture of ANU”

Target

- > Increase awareness of sustainability on campus measured via a biennial student and staff survey



Partnerships

ANUgreen is a member of several national and global university sustainability networks. These Partnerships help to increase awareness of sustainability on campus due to collaboration and implementation of sustainability initiatives.

> International Alliance of Research Universities (IARU)

ANU is a member of the IARU, a group of 10 world class research universities in Asia, North America and Europe. The IARU has committed to demonstrating international leadership in local campus sustainability issues, as well as supporting various research programs focussed on global sustainability. University staff are taking lead roles in IARU activities such as collaborative research and the coordination of student exchange programs and sustainability internships.

> International Sustainable Campus Network (ISCN)

The ISCN provides a global forum for universities to collaborate and exchange information on how to achieve sustainable campus operations.

> Australasian Campuses Towards Sustainability (ACTS)

ANU was a founding member of ACTS. ACTS aims to promote and support change towards best practice sustainability within the operations, curriculum and research of the tertiary education sector.

> Group of Eight (G08)

The G08 is a coalition of leading Australian universities, comprehensive in general and professional education and distinguished by breadth in research.

Sustainability on Campus

ANUgreen works with staff, students and visitors to find innovative solutions to create a sustainable campus. Activities include:

- organic gardening
- biodiversity monitoring
- bird watching
- habitat restoration
- international sustainability internships
- real life sustainability projects

CULTURE

ANU Sustainability Learning Community (SLC)

The ANU SLC is a network of staff and students that engage with, discuss and consider solutions to sustainability issues. It aims to provide students with the opportunity to get more actively involved in sustainability initiatives on campus and in the wider community.

The ANU SLC Organic Garden is a student and community organic garden focussed on giving people the skills and experience for sustainable food practices. Workshops held included growing your own veggies, keeping chooks and worm farming.

IARU Sustainability Internship

As part of the IARU Sustainability Internship, two students from Japan and Singapore worked in the ANUgreen office on a range of initiatives such as reductions in energy and water use, and waste consumption in student residences, and energy efficient upgrades of buildings such as double glazing. Two students from ANU were sent to the University of Cambridge and the National University of Singapore, also on an IARU Sustainability Internship, and worked on initiatives such as sustainable food on campus and implementation of a rooftop vegetable garden.

Sustainability in Coursework

Over 4200 students in 2016 were enrolled in courses with an element of sustainability such as Water Management, Urban Energy and Energy Efficiency, and Plants and Global Climate Change.

Sustainability and Heritage Events

- > A number of biodiversity events were run in 2016 including Birdwatching for Beginners, Sullivans Creek clean-Up, and tours of the Old Canberra House Grassy Woodlands.
- > ANU Heritage ran a series of events for the ACT and Region Heritage Festival with over 150 participants. Activities included guided tours of the Acton Campus and Mt Stromlo Observatory as well as tours of the Lindsay Pryor Walk which was completed in 2016.

Green Representatives

Each hall and college at ANU has a student Green Representative who is elected by fellow students. The Green representative manages the sustainability initiatives within their hall or college and works with ANUgreen on future sustainability initiatives and events.

Campaign to Reduce Energy and Water (CREW)

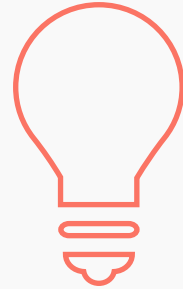
The CREW was launched in 2013 to aid in the reduction of the University's energy and water consumption by up to 10 per cent per annum. The Energy Change Institute and the Facilities and Services Division work together to manage and implement programs to achieve this 10 per cent reduction each year. CREW achievements for 2016 can be found under the water and energy themes.

ENERGY AND EMISSIONS

“Significantly reduce energy use and greenhouse gas emissions generated by the operations of ANU”

Targets

- > Reduce energy use per person by 20 per cent by 2021
- > Reduce energy use per gross floor area by 20 per cent by 2021
- > Decrease total carbon emissions by 30 per cent by 2021
- > Increase renewable energy generation by 50 per cent by 2021



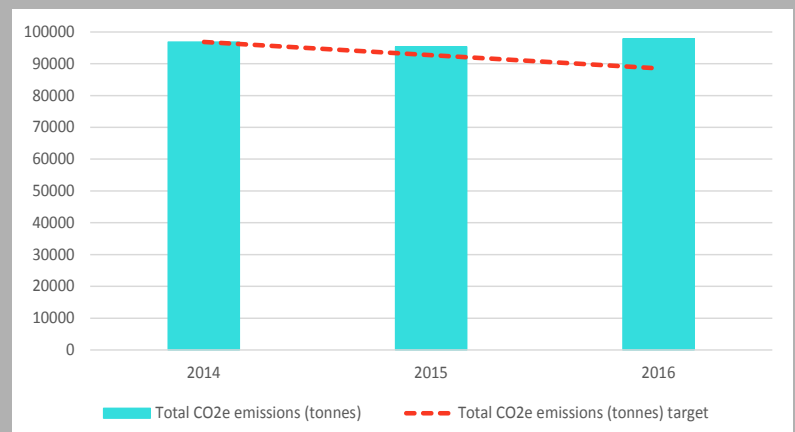
Initiatives

- > Over 360 new electricity smart meters were installed in all buildings at the Acton Campus and connected to the Building Management System platform. The roll out of the smart meters enables ANU to measure and manage electricity usage for buildings with an overall goal to achieve energy savings. The smart metering program will also enable Facilities and Services to cost recover electricity use for these buildings electronically which had previously been achieved manually.
- > Two lighting energy reduction projects have been completed at Toad Hall and Ursula Hall. The program replaced all fluorescent lights in the buildings to new LED technology and the installation of Residual Current Devices for safety.
- > An Energy Reduction Initiative program was initiated, with a number of main building air conditioning plants being replaced which were energy intensive and reaching end of life. The installation of new smart metering, high level interfaces between the Building Management System and the building Heating, Ventilation, and Air Conditioning (HVAC) plant, will enable the Facilities and Services Division to ensure the plant is operating optimally to reduce energy consumption.
- > Smart gas data loggers using the 3G mobile phone network have been rolled out across the Acton Campus. The loggers upload the gas meter data directly to a web portal. This data then feeds into the Building Management System to allow the Facilities and Services Division and Building Managers to carry out advanced data analysis and set automatic alarms for periods of high consumption.

Highlight

Due to a 37 per cent growth in Gross Floor Area, total campus energy carbon emissions increased by 1 per cent since 2014 levels. However, due to the energy initiatives implemented in 2016, energy use has decreased per person by 3 per cent.

Total campus energy CO₂e emissions

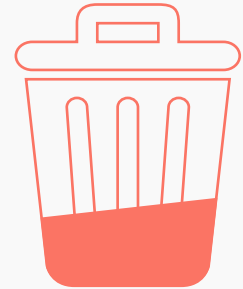


RECYCLING & WASTE MANAGEMENT

"Minimise waste to landfill by reducing waste generation and increasing recycling"

Targets

- > Increase recycling rate to 85 per cent by 2021
- > Divert 100 per cent of e-waste from landfill by 2021
- > Achieve national best practice level for recycling of construction waste
- > Reduce waste to landfill by 20 per cent per person by 2021



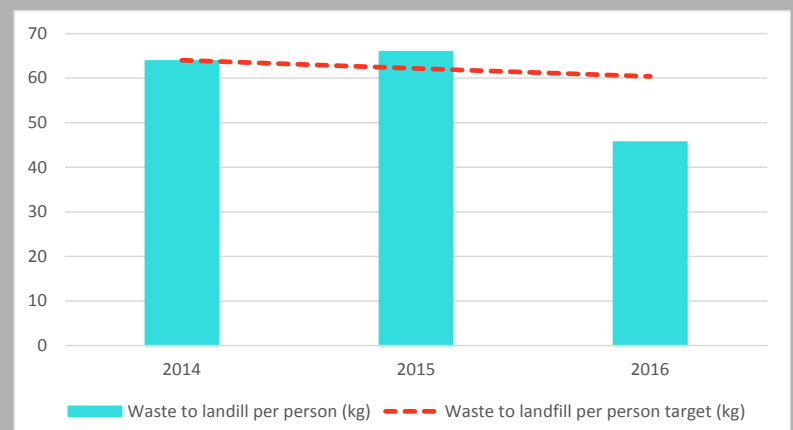
Initiatives

- > A new waste and recycling contract was implemented in 2016. The service will manage most major streams across the University including general waste, commingled recycling, paper and cardboard, and e-waste. With the technology and systems that the dedicated waste vehicles utilise, ANU is able to obtain a superior level of reporting. Bins are tracked by GPS and weights of bins emptied are recorded enabling efficiency and accuracy in actual costs. This method reflects the true cost of waste disposals and encourages the schools and colleges to generate less waste and divert waste from landfill. A secure waste disposal service is also offered under the contract at no cost to departments due to the ANU dedicated trucks being certified to carry confidential/secure paper. This has provided the University with a considerable saving during 2016 and will continue over the life of the contract.
- > Over 250 office chairs were recycled and repurposed for use in student accommodation
- > A total of 12 tonnes of e-waste was diverted from landfill which equates to over 540 computers
- > Over 200 tonnes of paper and cardboard was recycled in 2016 which equals the weight of 100,000 reams of paper
- > Gardens and Grounds recycle all green waste which is reused in the landscape as mulch
- > Over 12,000 tonnes of demolition waste from construction sites on the Acton campus was recycled

Highlight

Waste to landfill per person decreased by almost 29 per cent compared to 2014 baseline levels (64 kg to 46 kg), and total waste to landfill decreased by almost 24 per cent compared to 2014 baseline levels (1235 tonnes to 944 tonnes). Total waste recycled has decreased by 43 per cent compared to 2014 levels which can be attributed to more accurate green waste reporting.

Waste to landfill per person (kg)



POLLUTION PREVENTION

"Prevent environmental impact from pollution of University-related activities"

Targets

- > Minimise future pollution risks and manage existing contamination risks
- > Comply with all legislative and regulatory requirements

Initiatives

- > The ANU continues to steadily approach a 'best practice' of 20 per cent residual environmental risk across Campus. ANU has been implementing a coherent program for environmental risk management since 1998. A campus wide assessment of the risk of University activities polluting the environment was undertaken. Latest results show a reduced overall risk of 27 per cent due to new infrastructure, equipment and safety practices
- > The University implemented an in-house Chemical Management System to register and track chemicals and ensure their safe handling, storage and responsible disposal at the Acton Campus. The Chemical Management System will be progressively introduced across all ANU campuses by 2021
- > Ongoing environmental auditing as part of the quarterly Workplace Health and Safety inspections
- > Reporting under the National Pollutant Inventory and National Greenhouse Energy Reporting System
- > Over 35 student volunteers involved in outreach events such as Clean Up Australia Day

Volunteers cleaning up Sullivans Creek as part of Clean Up Australia Day

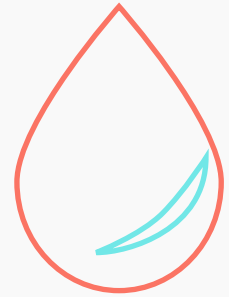


WATER

“Reduce potable water consumption within buildings and reduce potable water use on the landscape through effective design”

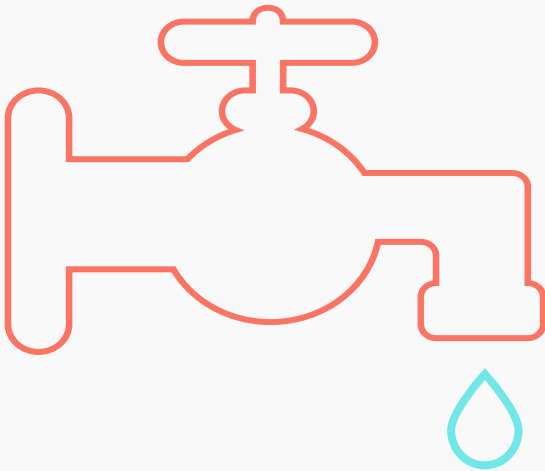
Targets

- > Reduce potable water use per person by 50 per cent by 2021
- > Reduce potable water use by 20 per cent campus-wide by 2021
- > Reduce use of potable water in landscape irrigation by 80 per cent by 2021



Initiatives

- > A successful water metering program was introduced across the ANU Acton Campus in 2016, with over 170 data loggers installed. This enables leaking/dripping taps and toilets across the campus to be identified and repaired in a timely manner. For example, one building had a baseline water consumption of approximately 20 litres per minute and after repairs, consumption had decreased to approximately 3 litres per minute. This equates to a water saving over 12 months of 8,935 kL and a cost saving of \$46,000. Building Managers will be provided access to the website enabling them to check the water consumption of their buildings in real time.

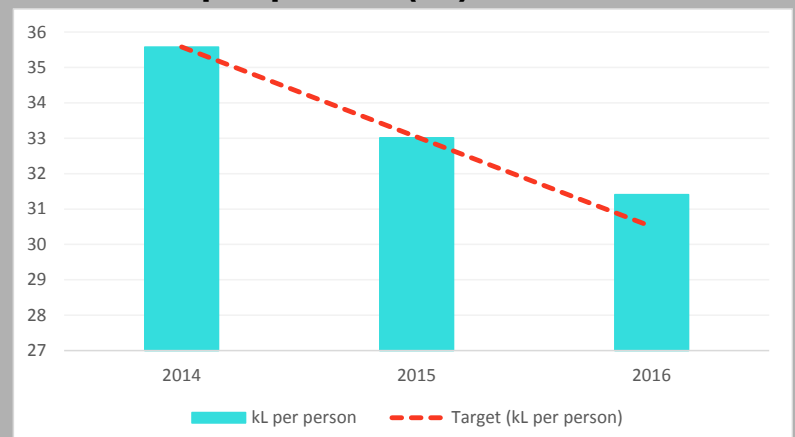


- > The Central Water Treatment Plant reused on average 17,800 Kilolitres of water in 2016 which was used to flush toilets in adjacent buildings.

Highlight

Total potable water use has decreased by almost 6 per cent across the campus since 2014 baseline levels which is a great achievement as there has been a 37 per cent increase in Gross Floor Area. Water initiatives undertaken in 2016 have reduced total water use per person by 12 per cent.

Water use per person (kL)

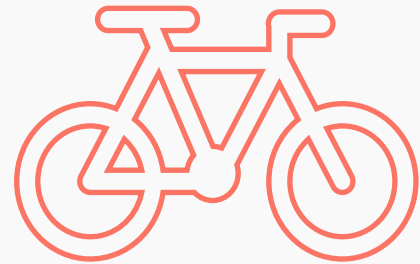


TRANSPORT

"Minimise the environmental impact of University-related travel"

Targets

- > Increase sustainable commuting to 80 per cent by 2021
- > Offset 100 per cent of vehicle fleet emissions by 2021
- > Increase the bicycle fleet by 10 per cent by 2021
- > Offset 100 per cent of air travel emissions by 2021
- > Reduce vehicle fleet emissions by 20 per cent by 2021



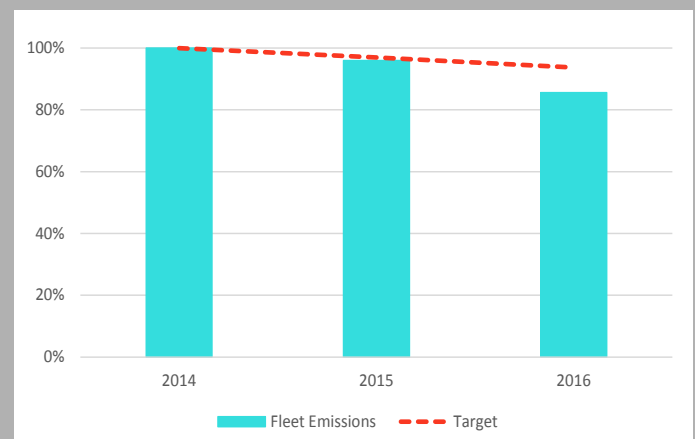
Initiatives

- > ANU Carshare was launched in 2016. ANU Carshare is an innovative sustainable transport option available to University staff and Higher Degree Research students for business and private use. This leading edge model not only delivers a corporate fleet solution but also nurtures a sustainable transport culture amongst staff and students. The ANU Carshare fleet consists of 14 vehicles ranging from small cars up to two 12 seater buses, with the growth of the fleet expected in the near future. In 2017, ANU Carshare will be available to all students for business and private use, reducing the need for student car ownership.
- > Ten cars were removed from the ANU pool vehicles and replaced with 14 more fuel efficient Carshare cars (minimum Four Green Star Rating). A further 9 vehicles were removed from the ANU vehicle fleet and not replaced. This has contributed to the 14 per cent decrease in fleet vehicle emissions since 2014.
- > For the first time, baseline data has been calculated for air miles travelled in 2016 due to the ANU air mile calculator developed by ANUgreen. In 2016, over 19,000 trips were taken (this includes connecting flights) with a total of 8549 tonnes of CO₂e emissions. These emissions were offset using Australian and International Gold Standard Offsets.
- > The ANU Timely Treadly program consists of over 110 bicycles for the use of staff and student on campus, and visiting scholars and postgraduate students. In 2016, 16 visitors took advantage of the Timely Treadly program totalling over 2100 days of bicycles being ridden instead of using a vehicle.

Highlight

In 2016, vehicle fleet emissions were reduced by 14 per cent from 2014 levels. Australian and International Gold Standard Offsets were purchased for 453 tonnes of carbon emissions.

Total fleet vehicles CO₂e emissions



LANDSCAPES AND BIODIVERSITY

“Adopt sustainable landscape practices that enhance habitat quality and connectivity and conserve biodiversity in key habitats”

Targets

- > Achieve no degradation of water quality in Sullivans Creek between when it enters and exits the Acton Campus
- > Comply with all environmental legislative requirements and regulatory requirements
- > Increase community awareness of campus landscapes and biodiversity conservation



Initiatives

- > The draft Biodiversity Management Plan 2016-2020 is currently under review. The plan provides a framework for managing the University's biodiversity values under the Environment Protection and Biodiversity Conservation Act 1999 and incorporates consultation feedback from the Commonwealth Department of Environment and wider community.
- > Biodiversity monitoring continued including monthly water quality sampling of Sullivan's Creek as part of the wider ACT Waterwatch program, and an annual Frogwatch survey which is conducted with the help of student volunteers.
- > Students and staff participated in a range of biodiversity activities including Birdwatching for Beginners course, Sullivans Creek Clean-Up, and tours of Old Canberra House Grassy Woodlands.
- > Planted understory under the Old Apple Box tree at Menzies Library to attract insect eating birds and encourage natural pest control, minimise soil compaction and enhance nutrient recycling. The plantings also help reduce risk to the public by restricting people under the tree canopy as this tree has been known to have a few limb failures.
- > Planted ground cover and shrub understory under the remnant yellowbox tree at the rear of Balmain Crescent to attract the smaller insect eating birds

Highlight

Almost 100 attendees participated in outreach events logging 100 contact hours



HERITAGE

“ANU will be a leading, best practice Heritage Manager - leading the way in balanced and innovative conservation, management and interpretation of its heritage places and their values”

Achievements

- > ANU was awarded two heritage grants in 2016 to support ongoing conservation and outreach activities. A major grant was received to redevelop the landscape connection between the Director's Residence and Commonwealth Solar Observatory at Mt Stromlo Observatory, and a smaller project undertaking oral histories for prominent Canberra/ANU figures was also allocated.
- > The Heritage Officer has provided advice for major and minor projects including Student Accommodation 5 (SA5), SA6 (Bruce and Wright Halls), the new CASS Building, the Physics Precinct Master Plan, Union Court redevelopment, the new facility for CECS and MSI and projects at the School of Music, School of Art, Coombs and Law. Significant liaison has also been undertaken with the Department of Environment and Energy, ACT Government and the National Capital Authority.
- > ANU Heritage ran a series of events for the ACT and Region Heritage Festival with over 150 participants. Activities included guided tours of the Acton Campus and Mt Stromlo Observatory as well as tours of the Lindsay Pryor Walk which was completed in 2016.
- > The Aboriginal Heritage Trail for the Acton Campus is in the final stages of completion and has included consultation with all four Representative Aboriginal Organisations in the ACT. This project is the first of its type at ANU and has already seen significant support and participation from internal and external community members through guided tours by Aboriginal Elders.
- > ANU Heritage has contributed significantly to the redevelopment of the Mt Stromlo Visitor Centre, which opened in August, and in the official launch of the Siding Spring Visitor Centre and open day.
- > ANU Heritage was nominated for the National Trust of Australia Heritage Awards, receiving an award for the Mt Stromlo Observatory Heritage Management Plan. ANU Heritage was also nominated for an ANU Media Award for the Mt Stromlo Observatory Visitor Centre.

Visitor investigating the ruins of the destroyed Oddie Telescope at the newly opened Mt Stromlo Observatory Visitor Centre (Photo: Stuart Hay)





The ANU Walks app, available for download on IOS and Android, showcases outdoor sculptures, heritage and the natural environment of the Acton Campus. The self-guided walking trails that can be found in the app are:

- > Architecture trail
- > Landscape trail
- > Lindsay Pryor walk
- > Political history trail
 - > Sculpture walk
- > Mt Stromlo heritage trail
 - > Sustainability walk



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